

**B. V. Skvortzov*: On new genera of Cryptomonadinae
recorded from North-Eastern China**

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褐色鞭毛藻類の新属について

In the present paper, the author gives descriptions to 10 new genera including 19 species of Cryptomonadinae collected and studied by him from the environs of Harbin, North Manchuria, China during his many year's stay in Harbin and not published yet. All the keys and the diagnoses are written in Latin. The list of these newly proposed genera are: *Calkinsiella*., *Kisselevia*., *Olivamonas*., *Protocryptomonas*., *Klebsiella*., *Meyeriella*., *Nodeana*., *Smithiella*., *Butschliella*., and *Lemmermanniella*. For both genera *Butschliella* and *Lemmermanniella*, a new family *Butschliellaceae* is proposed.

Material and Methods Cryptomonadinae were studied alive from collections made throughout the year in the environs of Harbin, in Sungari District, in rivers, lakes, swamps, bogs with *Drepanocladus exannulatus*, and in permanent pools and reservoirs. A peculiar cryptomonas flora was found under ice in winter (October-March), as well as in lakes and bogs throughout the valley, both in early spring and late autumn in water with temperature of from one to five degrees C. The following species are characteristic of cold water:—*Protocryptomonas ellipsoidea* sp. nov., *P. chilomonoides* sp. nov., *Klebsiella hemisphaerica* sp. nov., *Nodeana cyanea* sp. nov., *Smithiella nutans* sp. nov., *Butschliella olivacea* sp. nov., *Lemmermanniella gracillima* sp. nov. The type specimens were presented in the Herbarium of N.-E. China Academy, Harbin in 1962.

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Genus **Calkinsiella** gen. nov.

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Ordo Eucryptomonadinae, Fam. Cryptomonadaceae

Membrana firma, tenuissima et non metabolica; cellula obovata vel elliptica cum polis rotundatis in sectione visa compressa; flagella 2, fere aequilonga, 1.5-2-plo cellula longiora, parte anteriore inserta; chromatophor minutus, brunneus vel flavescens, $1/4-1/3$ cellulae occupans, in media parte vel parte anteriore cellulae positus; granulae amylaceae, 3-6, magnae. A genera *Cryptochrosis* et genera *Chroomonas* chromatophore minuto, paulo evoluto differt. Dedico hoc genus in memoriam Prof. Dr. G. N. Calkins, protistologo. Species tres.

Clavis specierum

1. Cellula obovata
2. Cellula parte anteriore dilatata; flagella in apice cellulae inserta.
 1. *C. obovata*
- 2.2 Cellula parte anteriore dilatata; flagella non in media parte apicis paulo inserta.
 2. *C. stagnalis*
 3. *C. ellipsoidea*
- 1.1 Cellula ellipsoidea.

1. **Calkinsiella obovata** sp. nov. fig. 1

Cellula obovata, parte anteriore dilatata, parte posteriore attenuata, cuneata et obtusa, 16 micr. lg., 10 micr. lt., in sectione visa non depressa; chromatophor in media parte cellulae positus brunneus cum 3 granulis amylaceis; flagella 2, inaequalia, fere 1.5 qui cellula longiora. Hab. in plancton lacum in valle fl. Sungari, prope oppidum Harbin. Distr. Manchuria borealis, China.

2. **Calkinsiella stagnalis** sp. nov. fig. 2

Cellula obovata apicibus rotundatis; flagella parte anteriore inserta inaequalia, principale fere duplo cellula longius; chromatophor minor, flavescens, subcentralis; granulae amylaceae vel guttae olei numerosae, prope nucleum positae et cum chromatophore conjunctae; cellula 12-13 micr. lg., 8-8.5 micr. lt. Hab. in stagno, prope Harbin. Distr. Manchuria borealis, China.

3. **Calkinsiella ellipsoidea** sp. nov. fig. 3, 4

Cellula ellipsoidea cum polis rotundatis, 14-15 micr. lg., 8-10 micr. lt.; flagella 2 fere 1.5 qui cellula longiora; chromatophor minutus et brunneus; granulae amylaceae magnae 3-5, movet rapide et rotante. Hab. in stagno, prope oppidum Harbin. Distr. Manchuria borealis, China.

Genus **Kisselevia** gen. nov.

Cellula asymmetrica dorsiventralis cellulae *Cryptomonadis* similis; chromatophores numerosi virides; a genere *Cyanomonas* Olm. chromatophoribus viridibus

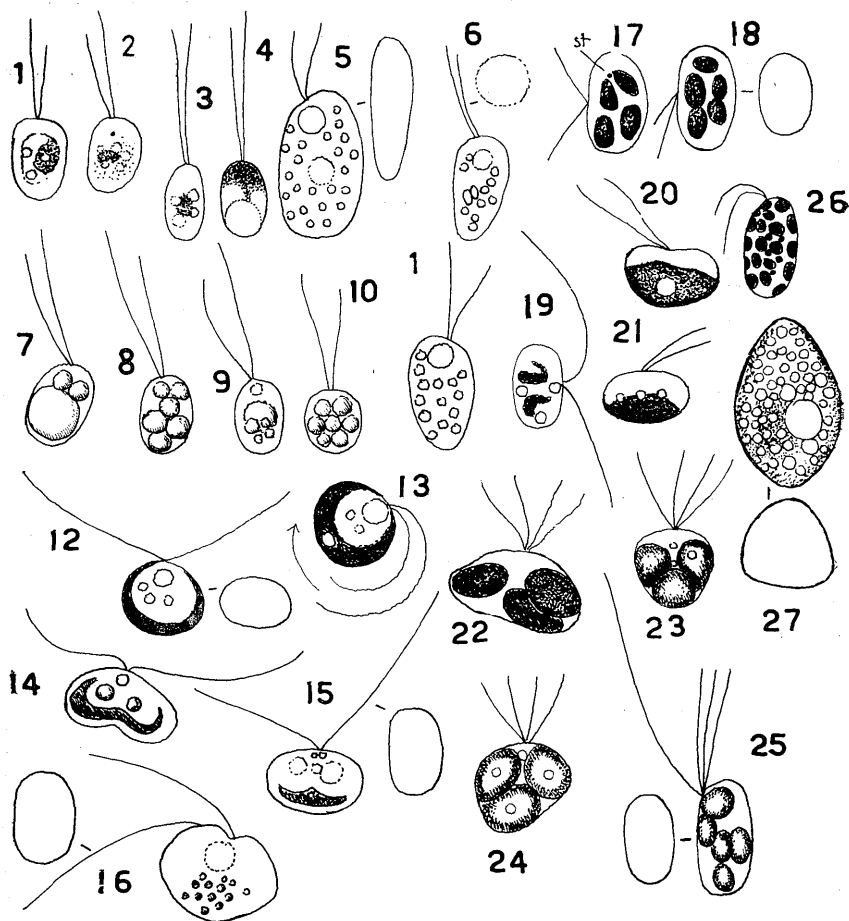


Fig. 1. *Calkinsiella obovata* sp. nov. 2. *Calkinsiella stagnalis* sp. nov. 3, 4. *Calkinsiella ellipsoidea* sp. nov. 5. *Kisselevia stagnalis* sp. nov. 6. *Kisselevia acuta* sp. nov. 7-9. *Protocryptomonas ellipsoidea* sp. nov. 10. *Protocryptomonas obovata* sp. nov. 11. *Protocryptomonas chilomonoides* sp. nov. 12, 13. *Klebsiella hemisphaerica* sp. nov. 14, 15. *Klebsiella ellipsoidea* sp. nov. 16. *Klebsiella planctonica* sp. nov. 17, 18. *Meyeriella viridis* sp. nov. 19. *Meyeriella longiflagellata* sp. nov. 20. *Nodeana cyanea* sp. nov. 21. *Smithiella mutans* sp. nov. 22-24. *Butschliella olivacea* sp. nov. 25. *Lemmermanniella gracillima* sp. nov. 26. *Olivamonas asiatica* nom. nov. 27. *Olivamonas tetraedrica* nom. nov.

non cyaneo-viridibus differt; dedico hoc genus in honorem Dom. Prof. Dr. J. A. Kisselew, algologo, USSR. Species duae.

Clavis specierum

- | | |
|---|------------------------|
| 1. Cellula ellipsoidea. | 1. <i>K. stagnalis</i> |
| 1.1 Cellula obovata vel pyriformis. | 2. <i>K. acuta</i> |
| 1. Kisselevia stagnalis sp. nov. | fig. 5 |

Cellula fronte visa ellipsoidea, cum polis rotundatis, parte anteriore a latere visa valde compressa angusto-fusiformis; flagella 2 inaequalia ad $1/2$ longitudinis cellulae longiora; chromatophores numerosi minuti et virides; nucleus centralis; vacuola contractilis antice; granulae amylaceae nullae; cellulae 30-32 micr. lg., 13-15 micr. lt. Hab. in stagno, prope oppidum Harbin. Distr. Manchuria borealis, China.

2. **Kisselevia acuta** sp. nov. fig. 6

Cellula elongato-obovata, parte anteriore rotundata, parte posteriore acuta, 18.5-19.5 micr. lg., 8 micr. lt., in sectione non compressa; flagella in apice cellulae lateralia, inaequalia; principale cellulae longius, secundare fere cellulae aequilongum; chromatophores minuta, discoidei, virides; vacuola contractiles antice; granulae amylaceae 2, ellipticae, cum nucleo medio in parte cellulae positae. Hab. in stagno, prope oppidum Harbin. Distr. Manchuria borealis, China.

Genus **Olivamonas** gen. nov.

Cellula asymmetrica dorsiventralis cum membrana firma, laevis et non metabolica; cellula fronte visa obovata vel elongato-elliptica, in sectione modice compressa vel triangulata, parte anteriore oblique truncata non concava; parte posteriore angustata vel rotundata vel non attenuata, late rotundata; flagella 2; chromatophores discoidei, rotundati, numerosi olivacei vel brunneo-virides; nucleus fere medianus; guttae olei prope nucleum; a genera *Cyanomonas* Oltm. chromatophoribus olivaceis non cyaneo-viridibus differt. Species duae.

Clavis specierum

- | | |
|--|--------------------------|
| 1. Cellula elongato-elliptica vel fere cylindrica. | 1. <i>O. asiatica</i> |
| 1.1 Cellula elongato-obovata | 2. <i>O. tetraedrica</i> |
| 1. Olivamonas asiatica nom. nov. | fig. 26 |

Cyanomonas asiatica Skv. in Species novae et minus cognitae algarum 1946, 16, tab. 1, fig. 12, Harbin.

Cellula elongato elliptica vel fere cylindrica, parte anteriore obliqua non concava, parte posteriore lato rotundata; flagella 2 aequilonga ad $2/3$ longitudinis cellulae longiora; parte posteriore late rotundata; chromatophores discoidei, numerosi

et olivacei; guttae olei prope nucleum; nucleus centralis; cellulae 15-16 micr. lg., 7.4-8 micr. lt. Hab. in stagno, prope oppidum Harbin. Distr. Manchuria borealis, China.

2. **Olivamonas tetraedrica** nom. nov. fig. 27

Cyanomonas tetraedrica Skv. in Species novae et minus cognitae algarum 1946, 16, tab. 1, figs. 10-11, Harbin.

Cellula fronte visa elongato-obovata; in sectione fere trigona, a latere visa elliptica; parte anteriore obliqua, parte posteriore angusta acuta et rotundata; flagella 2 ad $\frac{2}{3}$ longitudinis cellulae longiora; chromatophores discoidei, numerosi, olivacei; nucleus centralis; vacuola contractilis antice in media parte cellulae granulis rubris numerosis (oleum?); cellulae 23 micr. lg., 15 micr. lt. Hab. in stagno prope oppidum Harbin. Distr. Manchuria borealis, China.

Genus **Protocryptomonas** gen. nov.

Ordo Eucryptomonadinae, Fam. Cryptomonadaceae

Membrana firma, tenuissima, hyalina et non metabolica; cellula asymmetrica, dorsiventralis ellipsoidea vel obovata cum polis rotundatis; flagella 2 fere in apice cellulae inserta, principale duplo cellula longius, secundare 1.5 qui cellula longius; chromatophor nullus; granulae amylaceae 5-10, sphaericae; vacuola contractilis prope flagella; nucleus centralis. A genere *Chrysochrysis* Pasch., chromatophore nullo differt. Species 3.

Clavis specierum

- | | |
|---|----------------------------|
| 1. Cellula fere ellipsoidea | 1. <i>P. ellipsoidea</i> |
| 1.1 Cellulae obovatae. | |
| 2. Cellula late obovata; granulae amylaceae magnae. | 2. <i>P. obovata</i> |
| 2.2 Cellula elongato-obovata; granulae amylaceae minutae. | 3. <i>P. chilomonoides</i> |
| 1. Protocryptomonas ellipsoidea sp. nov. | fig. 7-9 |

Membrana tenuissima, firma et non metabolica; cellula ellipsoidea cum polis rotundatis; flagella 2 parte anteriore lateralia; flagellum principale duplo cellula longius, secundare 1.5 cellula longius; chromatophor nullum; nucleus centralis; movet rapide et rotante; 11-18 micr. lg., 7 micr. lt. Hab. in autumno in stagno cum aqua frigida, prope oppidum Harbin. Distr. Manchuria borealis, China.

2. **Protocryptomonas obovata** sp. nov. fig. 10

Cellula fere sphaerica brevior obovata, 10-11 micr. lg., 8 micr. lt.; flagella parte anteriore laterale; granulae amylaceae rotundatae; flagellum principale 2.5, secundare 2 cellulae longius. Hab. in stagno, prope oppidum Harbin., Distr. Man-

churia borealis, China.

3. **Protocryptomonas chilomonoides** sp. nov. fig. 11

Cellula 12–15 micr. lg., 7–8 micr. lt., asymmetrica dorsiventralis cum polis paulo angustatis et obtusatis, parte dorsali arcuata, parte ventrali concava, in sectione paulo compressa; flagella inaequalia, principale cellulae subaequilongum, secundare ad $2/3$ longitudinis cellulae longiorius; granulae amylaceae et guttae olei numerosae. Hab. in autumno in fossa cum aqua impura et frigida, prope oppidum Harbin. Distr. Manchuria borealis, China.

Genus **Klebsiella** gen. nov.

Ordo Eucryptomonadinae, fam. Nephroselmiaceae

Membrana firma, hyalina et non metabolica; cellulae asymmetricae dorsiventrales variabiles, fere sphaericae, ellipsoideae, ovaes vel late fusiformes, in sectione plus minus compressae, parte ventrali subrectos, semirobundatos vel concavos; parte dorsali arcuatos; flagella 2 inaequalia 1.5–3-plo cellulae longiora, in medio partis ventralis cellulae inserta; chromatophor 1, dilute vel intense viridis, non brunneis, diaphanus vel opacus; pyrenoidum adest vel abest; vacuola contractilis prope flagella; guttae olei adsunt; stigma nullum; nucleus centralis vel fere centralis; movet rapide et rotante; a generibus *Protochrysis* Pasch. et *Nephroselinis* Stein forma cellulae, chromatophore 1 et flagellis longis differt. Dedico hoc generis in memoriam Dom. G. Klebs, protistologo. Species. 3.

Clavis specierum

1. Cellula hemisphaerica, in sectione paulo compressa a ventre rotundata pyrenoidum adest.
 1. *K. hemisphaerica*
- 1.1 Cellula ellipsoidea, in sectione paulo compressa, a ventre fere recta vel paulo rotundata.
 2. *K. ellipsoidea*
- 1.1.1 Cellula ovalis vel fusiformis, in sectione compressa, a ventre concava.
 3. *K. planctonica*

1. **Klebsiella hemisphaerica** sp. nov. fig. 12, 13

Cellula hemisphaerica in sectione paulo compressa, 7–9 micr. in diam., parte ventrali subrotundata; flagella inaequalia, primum ad 2.5, alterum duplo cellula longius; chromatophor campanulatus et viridis; pyrenoidum in centro chromatophoris positum; nucleus centralis; guttae olei in centro cellulae positae; Hab. in autumno in stagno cum aqua frigida, prope oppidum Harbin. Distr. Manchuria borealis, China.

2. **Klebsiella ellipsoidea** sp. nov. fig. 14, 15

Cellula latere et fronte visa ellipsoidea paulo compressa, 9 micr. lg., 7 micr.

lt., parte ventrali paulo rotundata vel truncata parte dorsali late rotundata; flagella inaequalia primum cellula 1.5 qui longiora, alterum duplo cellula longius; chromatophor dilute viridis, lateralis, subcampanulatus, pyrenoidum nullum; nucleus in parte anteriore cellulae; guttae olei fere centralis; movet rapide. Hab. in pancton lacum in valle fl. Sungari, prope oppidum Harbin. Distr. Manchuria borealis, China.

3. **Klebsiella planctonica** sp. nov. fig. 16

Cellula ovalis vel late fusiformis cum polis angustatis et obtusatis in sectione compressa, parte ventrali concava parte dorsali arcuata; flagellum primum duplo, alterum triplo cellula longius; chromatophor diaphanus et dilute viridis; vacuola contractilis magna: guttae olei in centrum cum nucleo positae; cellula 12 micr. lg., 9 micr. lt. Hab. in pancton lacum in valle fl. Sungari, prope oppidum Harbin. Distr. Manchuria borealis, China.

Genus **Meyeriella** gen. nov.

Ordo Eucryptomonadinae, fam. Nephroselmidae

Membrana firma hyalina et non metabolica; cellula asymmetrica dorsiventralis, hemisphaerica, parte ventrali fere recta, dorso arcuata vel late rotundata, in sectione compressa; flagella 2 in medio partis, ventralis cellulae inserta inaequalia, principale 1.5 vel duplo cellula longius; chromatophores laminati, 3-8, virides, distinctae vel indistinctae, cum vel sine pyrenoide; nucleus centralis; stigma adest vel abest; a generibus *Protochrysis* Pasch. et *Nephroselmus* Stein chromatophoribus laminatis, viridibus, non brunneis differt. Dedico hoc genus in memoriam Dom. Prof. C. I. Meyer, algologo, Moskva, USSR. Species duas.

Clavis specierum

1. Chromatophores laminati, 6-8, distincti; stigma adest; pyrenoidia nulla.

1. *M. viridis*

1.1 Chromatophores laminati, 3-5, indistincti; stigma abest; pyrenoidia adsunt.

2. *M. longiflagellata*

1. **Meyeriella viridis** sp. nov. fig. 17, 18

Cellula elliptica, 9-10 micr. lg., 4 micr. lt., asymmetrica, parte ventrali fere subrecta, parte dorsali arcuata et rotundata, latere visa compressa, elliptica; membrana firma et hyalina; flagella inaequalia ad $\frac{2}{3}$ longitudinis cellulae longa; chromatophores 3-8, viride, elongati; pyrenoidia nulla; stigma in parte anteriore cellulae positum; movet rapide et saltatim. Hab. in plancton lacuum in valle fl. Sungari, prope oppidum Harbin. Distr. Manchuria borealis, China.

2. **Meyeriella longiflagellata** sp. nov. fig. 19

Cellula hemisphaerica, parte ventralis subrecta, parte dorsali arcuata, 11 micr. lg., 4 micr. lt.; flagella 2 retrorsa, primum cellula paulo longius, alterum fere duplo cellula longius; chromatophores 3-4, indistincti et viridis; pyrenoide adsunt; stigma nullum. Hab. in stagno, prope oppidum Harbin. Distr. Manchuria borealis, China.

Genus **Nodeana** gen. nov.

Ordo Eucryptomonadinae, fam. Nephroselidaceae

Cellula asymmetrica dorsiventralis subellipsoidea, parte ventrali subrecta vel concava, parte dorsali arcuato-rotundata, a vertice visa elliptica paulo compressa; flagella 2 in medio partis ventralis inserta; chromatophor 1 parte dorsalis positus cyaneo-viridis; nucleus centralis; a genere *Smithiella* gen. nov. chromatophore cyaneo-viride non brunneo differt. Dedico hoc genus in honorem Dom. Prof. Dr. Mitsuzo Noda, botanico et algologo, Harbin. Species unica.

1. **Nodeana cyaneo** sp. nov. fig. 20

Cellula 14-15 micr. lg., 9 micr. lt.; flagella inaequalia fere cellulae aequilongia; ceterum ut in diagnosi generi. Hab. in autumnno in stagno cum aqua frigida, prope oppidum Harbin. Distr. Manchuria borealis, China.

Genus **Smithiella** gen. nov.

Ordo Eucryptomonadinae, fam. Nephroselmidaceae

A genere *Nodeana* gen. nov. chromatophoribus brunneis, non cyaneo-viridibus et pyrenoidibus nullis differt. Dedico hoc genus in memoriam Dom. Prof. Dr. G. M. Smith, algologo, USA. Species unica.

1. **Smithiella nutans** sp. nov. fig. 21

Cellula asymmetrica dorsiventralis, fronte visa subelliptica, parte dorsali arcuata, parte ventrali recta vel paulo concava cum 2 flagella in medio parties ventrale inserta; chromatophor dorsalis brunneus; cellula 11-12 micr. lg., 7 micr. lt. Hab. in autumnno, in fossa cum aqua impura frigida, prope oppidum Harbin. Distr. Manchuria borealis, China.

Fam. **Butschliellaceae** fam. nov.

Cellulae variabiles, asymmetricae, ovaes vel elongato-ovaes; flagella 4 aequilongia vel inaequilongia, apicalia vel lateralialia; chromatophores olivacei vel cyaneo-virides, laminati, 3-5, pyrenoida absunt vel adsunt. Genera duas.

Clavis generum

1. Chromatophores olivacei; flagella aequilongia. Genus *Butschliella*.

1.1 Chromatophores cyaneo-virides; flagella inaequalia. Genus *Leimmermaniella*.

Genus **Butschliella** gen. nov.

Cellula asymmetrica dorsiventralis depressa et non compressa; cellula fronte visa oblique obovata cum polis rotundatis, parte ventrali concava, parte dorsali convexa; flagella 4 aequilonga in medio parte ventrale cellulae inserta; chromatophores 3; olivacei cum 3 pyrenoides; vacuola contractili 1 prope flagella; granulae amylaceae 2-3; nucleus contractilis; Dedico hoc genus in memoriam O. Butschli, protistologo clarissimo. Species unica.

1. **Butschliella olivacea** sp. nov. fig. 22-24

Cellula 15-16 micr. lg., 11-12 micr. lt.; ceterum ut in diagnosi generis. Hab. in autumno in fossa cum aqua impura frigida, prope oppidum Harbin. Distr. Manchuria borealis, China.

Genus **Lemmermanniella** gen. nov.

Cellula asymmetrica dorsiventralis, elongato obovata, parte anteriore dilatata oblique truncata et rotundata, parte posteriore paulo angustata et rotundata, in sectione compressa; flagella 4 lateralia, parte anteriore cellulae inserta; 3 flagella cellula sesquilingiora, 1 duplo vel triplo cellula longius; chromatophores laminati, 6-8, cyaneo-virides; granulae amylaceae et guttae olei 2-3; vacuola contractilis indistincta; a genus *Butschliella* gen. nov. flagellis inaequalibus et chromatophoribus cyaneo-viridibus differt. Dedico hoc genus in memoriam Dom. E. Lemmermann, algologo. Species unica.

1. **Lemmermanniella gracillima** sp. nov. fig. 25

Cellula 12-15 micr. lg., 8-9 micr. lt.; flagella inaequalia. Hab. in autumno in Zizanietis (*Zizania latifolia* Turcz.) et in stagnis cum aqua impura et frigida, prope oppidum Harbin. Distr. Manchuria borealis, China.

Literatures

Pascher, A. Cryptomonadineae. Süßwasser-Flora. Heft 2, 1913. Kisselev, J. A. Pyrrophyta. Key of freshwater algae of USSR, 6: 1954. Moskva. Skvortzov, B. Species novae et minus cognitae algarum 1964, Harbin.

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中国東北区(満州)ハルビンで採集した褐色鞭毛藻類の *Cryptomonadinae* の 1 新科, 10 新属, 19 新種を報告, 属の記載, 種への検索表と各種の記載を発表した。そのうちに, 日本人植物学者として最後まで満州に残留した野田光蔵氏を記念する新属, 新種 *Nodeana cyanea* Skv. が含まれている。